

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Margaret P. Opolski

Art Unit: 1713

Serial No.: 08/796,987

Examiner: Judy M. Reddick

Filed: 02/07/97

Customer No.: 23483

Title: Water Based Hydrophilic Coating Compositions and Articles Prepared
Therefrom

Assistant Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Please preliminarily amend the above-identified application as follows.

In the Specification:

On page 1, after the Title and before the Background of the Invention, please insert the following paragraph:

--This application is a continuation of and claims priority from co-pending application U.S.S.N. 08/796,987, filed February 2, 1997, and entitled "Water-Based Hydrophilic Coating Compositions and Articles Prepared Therefrom," the entirety of which is incorporated by reference.—

Please replace the paragraph beginning on page 4, line 1 with the following replacement paragraph:

The functional moiety may be selected from the group consisting of amino, hydroxyl, amido, carboxylic acid and derivatives thereof, sulfhydryl (SH), unsaturated carbon bond and heteroatom bonds, N-COOH, N(C=O)H, S(OR), alkyd/dry resin, formaldehyde condensate ,

methyol acrylamides and allylic groups. The supporting polymer may be selected from the group consisting of polyacrylates, polymethacrylates, polyurethanes, polyethylene and polypropylene co-difunctional polymers, polyvinyl chlorides, epoxides, polyamides, polyesters and alkyd copolymers. The hydrophilic polymer may be selected from the group consisting of poly(N-vinyl lactams), poly(vinylpyrrolidone), poly(ethylene oxide), poly(propylene oxide), polyacrylamides, cellulosics, methyl cellulose, polyanhydrides, polyacrylic acids, polyvinyl alcohols and polyvinyl ethers.

Please replace the paragraph beginning on page 5, lines 1 and 9, with the following replacement paragraphs;

In another aspect of the invention, a coated article is provided having a surface coated with a hydrophilic coating. The hydrophilic coating includes a three-dimensional supporting polymer matrix, in which the supporting polymer forms a three-dimensional network through crosslinking bridges; and a hydrophilic polymer, in which the hydrophilic polymer is associated with the supporting polymer. The coating is characterized in that the supporting polymer forms a three-dimensional network which, when wet, minimizes disassociation of the hydrophilic polymer and retains slip for up to 24 hours in ambient aqueous medium.

In one embodiment of the invention, the supporting polymer is selected from the group consisting of polyacrylates, polymethacrylates, polyurethanes, polyethylene and polypropylene copolymers, polyvinyl chlorides, epoxides, polyamides, polyesters and alkyd copolymers. In another embodiment of the invention, the hydrophilic polymer is selected from the group consisting of poly(N-vinyl lactams), poly(vinylpyrrolidone), poly(ethylene oxide), poly(propylene oxide), polyacrylamides, cellulosics, methyl cellulose, polyacrylic acids,

polyvinyl alcohols, and polyvinyl ethers.

Please replace the paragraph beginning on page 6, line 30 with the following replacement paragraph:

By "crosslink reaction" as that term is used herein it is meant a reaction which forms covalent bridges or linkages between remote sites on the supporting polymer backbone. The crosslink reaction may occur by self-crosslinking of the functional pendant groups directly or by addition of a crosslinking agent which reacts at the functional group to form the requisite linkage.

Please replace the paragraph beginning on page 10, line 18 with the following replacement paragraph:)

Use of polymers has several advantages over the use of monomers. First, it avoids toxic monomers which must be rigorously removed before subsequent use in medical applications. Second, it allows preparation of water-based formulations because the polymer is either soluble in water or may be prepared as a water-based emulsion or dispersion. In addition, there is more control over the nature of the polymer, e.g., molecular weight, degree of branching, etc. before blending and crosslinking.

Please replace the paragraph beginning on page 11, line 2 with the following replacement paragraph:

The coating composition may additionally include a crosslink agent. Suitable crosslink agents include, but are not limited to, polyfunctional aziridines, polyfunctional carbodiimides and polyfunctional epoxides. Additionally, crosslinking may be initiated by external factors, such as heat and/or uv irradiation, either in place of or in conjunction with a crosslink agent. Where higher temperature may be tolerated, the use of melamine and urea/formaldehyde condensates is

possible. Typically, the crosslink agent may be a di- or tri-functional compound; however, it is contemplated as being within the scope of the invention to use polyfunctional crosslink agents having three or more functional groups. It is also contemplated as within the scope of the invention to use ionic components, such as Zn, Ca and Mg, as the crosslink agent.

Please replace the paragraph beginning on page 15, line 16 with the following replacement paragraph:)

Crosslinked samples were then modified with the hydrophilic polymer by adding predissolved 5% by weight hydrophilic polymer resin in water, added to provide a three part supporting polymer resin to one part hydrophilic polymer coating composition, unless noted otherwise.

In the Claims:

Please cancel claims 22-28.

Please add the following new claims.

29. (new) A coated article having a surface coated with a hydrophilic coating, said hydrophilic coating comprising:
a polymer selected from the group consisting of polyacrylates and polymethacrylates, said polymer forming a three-dimensional supporting network through crosslinking bridges; and
a hydrophilic polymer, said hydrophilic polymer associated with the polyacrylate polymer network,

the polymer network having a crosslink density such that the coating retains durability and slip for up to 24 hours in ambient aqueous medium.

30. (new) A coated article having a surface coated with a hydrophilic coating, said

hydrophilic coating comprising:

a polymer selected from the group consisting of polyacrylates and polymethacrylates, said polymer having an equivalent weight of functional moiety in the range of 215-1000 and forming a three-dimensional supporting network through crosslinking bridges at the functional moiety; and

a hydrophilic polymer, said hydrophilic polymer associated with the polyacrylate polymer network,

the polymer network having a crosslink density such that the coating retains durability and slip for up to 24 hours in ambient aqueous medium.

31. (new) A coated article having a surface coated with a hydrophilic coating, said hydrophilic coating comprising:

a polymer selected from the group consisting of epoxides, polyvinyl chlorides, polyethylene and polypropylene co-difunctional polymers, polyamides, polyesters and alkyl copolymers, said polymer forming a three-dimensional supporting network through crosslinking bridges; and

a hydrophilic polymer, said hydrophilic polymer associated with the polyacrylate polymer matrix,

the polymer matrix having a crosslink density such that the coating retains durability and slip for up to 24 hours in ambient aqueous medium.

REMARKS

The above-identified continuation application has been preliminarily amended. The specification has been amended to correct typographical errors. Claims 22-28 have been cancelled and claims 29-31, directed to specific polymer compositions, have been added. Please enter the amendment prior to calculation of the filing fee. No new matter has been added by amendment.

The correspondence address for the undersigned attorney has changed. Effective immediately, please address all communication in this application to:

Mary Rose Scozzafava
Hale and Dorr LLP
60 State Street
Boston, MA 02109

Please charge any fees or credit any overpayments to our Deposit Account No. 08-0219.

Respectfully submitted,

Date: May 15, 2001

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Version of amended specification with changes indicated

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dimensional supporting polymer matrix, in which the supporting polymer forms a three-dimensional network through crosslinking bridges; and a hydrophilic polymer, in which the hydrophilic polymer is associated with the supporting polymer. The coating is characterized in that the supporting polymer forms a three-dimensional network which, when wet, minimizes [eliminates] disassociation of the hydrophilic polymer and retains slip for up to 24 hours in ambient aqueous medium.

In one embodiment of the invention, the supporting polymer is selected from the group

consisting of polyacrylates, polymethacrylates, polyurethanes, polyethylene and polypropylene copolymers, polyvinyl chlorides, epoxides, polyamides, polyesters and alkyd copolymers. In another embodiment of the invention, the hydrophilic polymer is selected from the group consisting of poly(N-vinyl lactams), poly(vinylpyrrolidone), poly(ethylene oxide), poly(propylene oxide), polyacrylamides, cellulosics, methyl cellulose, polyacrylic acids, polyvinyl alcohols, and polyvinyl ethers.

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